Contents

Preface
by W. F. Vincent and J. C. Ellis-Evans vii

Rivers and streams
Filamentous green algae in freshwater streams on Signy Island, Antarctica
by I. Hawes 1
The effects of nutrient limitation and stream discharge on the epilithic microbial community in an oligotrophic Arctic stream
by M. A. Hullar and J. R. Vestal 19
Microbial communities in southern Victoria Land streams (Antarctica) I. Photosynthesis
by C. Howard-Williams and W. F. Vincent 27
Microbial communities in southern Victoria Land streams (Antarctica) II. The effects of low temperature
by W. F. Vincent and C. Howard-Williams 39
Nitrogen dynamics in two antarctic streams
by C. Howard-Williams, J. C. Priscu and W. F. Vincent 51
Benthic algal biomass and productivity in high subarctic streams, Alaska
by J. D. LaPerriere, E. E. Van Nieuwenhuyse and P. R. Anderson 63
Broadscale patterns in the distribution of aquatic and terrestrial vegetation at three ice-free regions on Ross Island, Antarctica
by P. A. Broady 77
Community structure of benthic invertebrates in interior Alaskan (USA) streams and rivers
by M. W. Oswood 97
Variability of macroinvertebrate community composition in an arctic and subarctic stream
by M. C. Miller and J. R. Stout 111
Geochemical processes in the Lake Fryxell Basin (Victoria Land, Antarctica)
by W. J. Green, T. J. Gardner, T. G. Ferdelman, M. P. Angle, L. C. Varner and P. Nixon 129

Lakes and ponds
Some aspects of iron cycling in maritime antarctic lakes
by J. C. Ellis-Evans and E. C. G. Lemon 149
Nitrogen cycling in Arctic lakes and ponds
by V. Alexander, S. C. Whalen and K. M. Klingensmith 165
Photon dependence of inorganic nitrogen transport by phytoplankton in perennially ice-covered Antarctic lakes
by J. C. Priscu 173
Patterns of energy storage in *Pseudoboeckella poppei* (Crustacea, Copepoda) from two contrasting lakes on Signy Island, Antarctica
by A. Clarke, J. C. Ellis-Evans, M. W. Sanders and L. J. Holmes 183

Tundra ponds of the Yukon Delta, Alaska, and their macroinvertebrate communities
by J. A. Maciolek 193
Vertical distributions of a planktonic harpacticoid and a calanoid (Copepoda) in a meromictic Antarctic lake
by I. A. E. Bayly and D. Eslake 207
Physico-chemical characteristics and origin of hypersaline meromictic Lake Garrow in the Canadian High Arctic
by M. Ouellet, M. Dickman, M. Bisson and P. Pagé 215
Meromixis in an Antarctic fjord; a precursor to meromictic lakes on an isostatically rising coastline
by J. B. Gallagher, H. R. Burton and G. E. Calf 235
Chemical characteristics of pond waters in the Labyrinth of southern Victoria Land, Antarctica
by T. Torii, S. Nakaya, O. Matsubaya, G. I. Matsumoto, N. Masuda, T. Kawano and H. Murayama 255
Biogeochemical study of organic substances in Antarctic lakes
by G. I. Matsumoto 265
Vertical distribution of organic constituents in an Antarctic lake: Lake Fryxell
by G. I. Matsumoto, K. Watanuki and T. Torrii 291
Perennially ice-covered Lake Hoare, Antarctica: physical environment, biology, and sedimentation
by R. A. Wharton Jr, G. M. Simmons Jr and C. P. McKay 305

Geographical index 321
Map index 323